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April 21, 2020

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th St S.W., Room TW-A325
Washington, DC 20554

via ECFS

RE: Re: Notice of Ex Parte Presentation: IB Docket Nos. 11- 109 and 12-340; IBFS File Nos. SES-MOD-20151231-00981; SAT-MOD-20151231-00090; SAT-MOD-20151231-00091; SES-AMD-2018531-00856; SES-AMD-2018531-00044; SES-AMD-2018531-00045

Dear Ms. Dortch

On Friday, April 17, 2020, representatives of Aviation Spectrum Resources, Inc. (“ASRI”), the Air Line Pilots Association, International (“ALPA”), the Aircraft Owners and Pilots Association (“AOPA”), Airlines for America, Alaska Airlines, Bristow Group Inc., Delta Air Lines, Frontier Airlines, Helicopter Association International, the International Air Transport Association (“IATA”), the National Business Aviation Association (“NBAA”), Southwest Airlines, United Airlines, and United Parcel Service¹ met by telephone with Commissioner Michael O’Rielly and his wireless advisor, Erin McGrath, to discuss the aviation industry’s strong concerns with any action to grant the license modification applications of Ligado Networks (“Ligado”) in the above-referenced matters. The aviation representatives reiterated that, based on the facts in the current public record, Ligado’s applications should be denied because Ligado has failed to provide answers to many fundamental questions regarding coexistence with critical aviation safety-of-flight systems dependent on GPS, does not address protection of satellite communication (“SATCOM”) services central to safe aviation, and would impose undue burdens on aviation operations.

Ligado seeks to convert its licensed mobile satellite spectrum to terrestrial mobile use, despite the lack of a mobile services allocation, through the ancillary terrestrial component (“ATC”) rules. Andrew Roy of ASRI explained to the Commissioner that the wider aviation

¹ See the Attachment for full list of participants.

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community's concerns with Ligado's applications are of a long-standing nature, and have been fully documented in the record but only partially responded to by Ligado, if at all.² The aviation community has consistently demonstrated that Ligado's proposals unacceptably threaten the use of GPS by aviation, and in particular certified aviation GPS receivers, and present serious interference potential into important SATCOM provided by Inmarsat and Iridium, upon which aviation safety depends.

In the meeting, the aviation representatives highlighted for the Commissioner several areas which raised the greatest concerns for aviation:

- Despite the aviation community's continued explanation, Ligado has incorrectly and disingenuously misconstrued the Federal Aviation Administration's ("FAA's") technical analysis of its proposal as an endorsement by aviation, which it is not, and never has been.³ The FAA merely stated that a 9.8 dBW EIRP power limit would be needed to protect a certified aviation GPS outside a 250-foot radius around a Ligado base station "operating under the assumption of the described 250 foot (76.2 m) radius assessment zone."⁴ This assumption was

² See, e.g., Letter of Edward A. Yorkgitis, Jr., Kelley Drye & Warren, LLP, counsel to ASRI, to Marlene H. Dortch, Secretary, FCC, filed in IB Docket Nos. 11-109 and 12-340, RM-11681; IBFS File Nos. SES-MOD-20151231-00981, SAT-MOD-20151231-00090, and SAT-MOD-20151231-00091 *et al.* (dated June 20, 2017) ("ASRI June 2017 Letter"); Comments of Aviation Spectrum Resources, Inc., IB Docket Nos. 11-109 and 12-340; IBFS File Nos. SES-MOD-20151231-00981, SAT-MOD-20151231-00090, SAT-MOD-20151231-00091, SES-AMD-20180531-00856 (July 9, 2018) ("ASRI Comments on Ligado 2018 Amendment"). Reply Comments of Aviation Spectrum Resources, Inc., IB Docket Nos. 11-109 and 12-340; IBFS File Nos. SES-MOD-20151231-00981, SAT-MOD-20151231-00090, SAT-MOD-20151231-00091, SES-AMD-20180531-00856 (July 24, 2018) ("ASRI Reply Comments on Ligado 2018 Amendment"); Letter of Edward A. Yorkgitis, Jr., Kelley Drye & Warren, LLP, counsel to ASRI, to Marlene H. Dortch, Secretary, FCC, filed in IB Docket Nos. 11-109 and 12-340; IBFS File Nos. SES-MOD-20151231-00981, SAT-MOD-20151231-00090, SAT-MOD-20151231-00091, SES-AMD-20180531-00856 (dated Sep. 24, 2018) ("ASRI September 2018 Letter") *attaching the* Letter from the First Vice-Chair of the National Space-based Positioning, Navigation, and Timing Advisory Board to the Co-Chairs of the National Executive Committee for Space-based Positioning, Navigation and Timing, dated August 10, 2018.

³ See, e.g., general discussion of the 9.8 dBW and 250-foot standoff issue in *ASRI Reply Comments on Ligado 2018 Amendment* at 3-8.

⁴ U.S. Department of Transportation, "Global Positioning System (GPS) Adjacent Band Compatibility Assessment," Final Report (April 2018), available at <https://www.transportation.gov/sites/dot.gov/files/docs/subdoc/186/dot-gps-adjacent->

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provided by Ligado and has been opposed since 2016 by the majority of the aviation community⁵. The FAA offered no endorsement in the DOT ABC Report of the sufficiency of the standoff cylinder concept from an operational perspective, noting that “it has not fully studied the operational implications of the Ligado proposal for certified GPS receivers.”⁶ Furthermore the FAA stated that its analyses in question “do not include an operational assessment of the impact of the assessment zone in densely populated areas, which may present additional variables, including the risk posed to people and property for operations such as UAS using certified avionics which may be required to operate within the assessment zone.”⁷ More simply, the FAA engineering is sound given the assumptions Ligado made, but Ligado’s operational assumption that certified GPS is not required within 250 feet of a cell tower was incorrect to begin with.

- To further expand on certified GPS receiver usage, the aviation representatives underscored that to fulfill several mission types, including emergency medical evacuations, helicopters often operate ubiquitously, including within 250 feet of towers and other structures, and rely on GPS in addition to pilot vision when doing so.⁸ The aviation representatives noted further that aircraft GPS receivers serve numerous roles other than position *per se* that would be affected within 250 feet of a tower (or other obstacle), and otherwise, including terrain awareness and ground avoidance, navigation planning data, Automatic Dependent Surveillance-Broadcast (“ADS-B”) position reporting (quickly becoming a core capability in

[band-fmal-reportapril2018.pdf](#) at Section 5.2.3.9, p. 153 (emphasis added) (“DOT ABC Report”).

⁵ See RTCA Tactical Operation Committee Report: Operational Review of Ligado Networks Proposal for Standoff Cylinders, dated December 2016 available at https://www.rtca.org/sites/default/files/final_toc_ligado_proposal_review.pdf

⁶ DOT ABC Report at Section 5.1.1., p. 120 (emphasis added).

⁷ *Id.* at vii.

⁸ A number of pilots and other aviation associations explained the operational concerns as follows:

From the perspective of operators that conduct a variety of missions in the low altitude environment, including unmanned operations, often in close proximity to flight obstructions, a loss of navigational accuracy/reliability would produce distractions for operators, unnecessarily increase crew workloads, and could have adverse impacts on the ability to safely navigate. Additionally, within areas of high density tower deployment, operators could potentially experience repeated loss of GPS.

Letter of Capt. Tim Canoll, President, Air Line Pilots Association, International, et al., to Daniel K. Elwell, Acting Administrator, FAA, filed in IB Docket Nos. 11-109, 12-340, at 2 (June 15, 2018).

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the U.S. National Airspace System (“NAS”) for air traffic management and aircraft coordination.), and other air and ground systems have never been accounted for in the Ligado proposal.

- The aviation representatives explained the inadequacy, as a possible license condition, of Ligado’s proposal that its base stations have the flexibility to increase power above the 9.8 dBW EIRP but within a license limit of 32 dBW EIRP provided it limits its base stations’ power at a level designed achieve compatibility with current and any future Minimum Operational Performance Standards (“MOPS”) “insofar as they are incorporated into an active Technical Standard Order [(“TSO”)] by the FAA.” They noted that the removal of active TSO status neither stops the use or the production of equipment compatible with MOPS under a *cancelled, but not withdrawn*, TSO. If Ligado were given the power level flexibility, as it proposes, based only on active TSOs, aircraft using authorized equipment under inactive TSOs would deny aviation use of GPS over large areas where Ligado base stations are installed up to altitudes of 1800 feet.⁹
- The aviation representatives also explained that the notification provisions as spelled out in Ligado’s proposal regarding base station deployments suffer from severe deficiencies that would hamper the availability to pilots of critical changes concerning the towers and the potential interference and air hazards they represent. In brief, as ASRI has explained previously in this docket, under Ligado’s proposed procedures, aviation operators would not be notified by Ligado of new base station deployments, but instead would have to request access through the FCC’s confidentiality procedures to proactively and continuously search new and modified stations that could impact the environment in which aircraft equipped with certified GPS receivers operate.¹⁰ This is fundamentally different and unacceptably burdensome compared to what operators do to obtain information regarding other communications towers, and would inhibit their ability to have up to date information necessary for safe flight. The towers represent a threat of harmful interference to GPS. Airspace notification and distribution is a critical function that should not happen via confidential databases for very good reasons given safety implications for pilots.
- The alleged commitment by Ligado to act upon “credible” reports of interference from the Ligado system is not sufficiently spelled out to know exactly what Ligado would deem credible, how much discretion it would have in this area, what the time frames and scope of response would be, and when FCC involvement would occur. Without these provisions being reasonably clarified,

⁹ See ASRI Reply Comments on Ligado 2018 Amendment at 10-12.

¹⁰ See ASRI Comments on Ligado 2018 Amendment at 5-6.

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assessed by the relevant aviation safety authorities, and made public, little credence can be given to Ligado commitments to respond to and resolve complaints of interference.

- The aviation representatives explained that Ligado's proposed services would interfere with the co-frequency Inmarsat SATCOM communications (space-to-Earth) that provide both ground connectivity and Air Traffic Control in certain categories of airspace, something which Inmarsat itself has acknowledged.¹¹ Presupposing that compatibility can be achieved between Inmarsat downlinks and Ligado base station transmissions, aviation understands that would require a full fleet retrofit for Inmarsat receivers on aircraft and may require separation zones around aircraft operating areas while that retrofit remains incomplete.¹² Ligado and Inmarsat have indicated that there is an undisclosed agreement to address these issues, but have ignored all of aviation's many requests for details and dialogue. Just as it is impossible for aviation and other stakeholders to comment on the proposed (and speculative) Ligado/Inmarsat arrangements, including issues of cost, implementation, allocations of responsibility, or a timeline, it would seem impossible to grant the applications without knowing how, or even in what timeframe, this matter of interference to Inmarsat SATCOM would be addressed.¹³ Such a transition, even under the best of circumstances, could be several years long even after assuming committed available manufacturing capacity and that all other issues are readily resolved.

The meeting concluded by the aviation representatives underscoring that, if Ligado's applications are granted without the foregoing issues being adequately resolved, and Ligado deploys its systems as proposed in the latest public iteration of its business plans, it would represent a clear and unfortunate step backward in American aeronautical safety communications and in the efficiency of operations in the NAS.

¹¹ See Inmarsat Group Limited - Inmarsat Group Limited Interim Results 2016 – Supplemental Disclosure 14 September 2016, at 5 (Sep. 14, 2016) (“the provision of integrated MSS/ATC services could interfere with our satellites and user terminals, which may adversely impact our services, costs and revenues”), *quoted in ASRI Reply Comments on Ligado 2018 Amendment* at 17.

¹² See, *id.*, at 16-18.

¹³ During the meeting, the aviation industry's concurrence with the interference concerns raised by Iridium regarding potential interference from Ligado handsets into Iridium's SATCOM system, the other SATCOM system on which aviation primary relies, was reiterated.

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This notice is being filed as required by Section 1.1206 of the Commission's rules, 47 C.F.R. § 1.1206, for inclusion in Docket No. 18-122.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'E. Yorkgitis, Jr.', written in a cursive style.

Edward A. Yorkgitis, Jr.
Counsel to Aviation Spectrum Resources, Inc.

Attachment

cc (via email): Commissioner Michael O'Rielly
Erin McGrath

ATTACHMENT: Aviation Industry Meeting Participants

Aviation Spectrum Resources, Inc. (“ASRI”)

Andrew Roy, Director of Engineering
Edward A. Yorkgitis, Jr., Kelley Drye & Warren, LLP, Counsel to ASRI

The Air Line Pilots Association, International (“ALPA”)

Bryan Lesko
Ed Hahn

The Aircraft Owners and Pilots Association (“AOPA”)

Rune Duke,

Airlines for America

Robert Ireland

Alaska Airlines

Jeff Monroe

Bristow Group Inc.

James Dickens

Delta Air Lines

Kevin Heffernan

Frontier Airlines

Brian Dalton

Helicopter Association International

John Shea
Harold Summers

The International Air Transport Association (“IATA”)

Noppadol Pringvanich
Chad Heflin

The National Business Aviation Association (“NBAA”)

William Stine, on its behalf

Southwest Airlines

Neal Young

United Airlines

Charles Stewart
David Sambrano

United Parcel Service

Tim Totten
Nicholas Lewis